

Reno Air National Guard Base

152nd Airlift Wing

Presented by:

Nevada Air National Guard

ERM-West, Inc.

25 July 2006



Meeting Agenda

- **Overview of the Environmental Restoration Program**
- **Reno ANG Base Background**
- **Closed Sites (6 sites)**
- **Sites under Closure Consideration (7 sites)**
- **Site 7 Overview & Status**
- **Questions?**



Environmental Restoration Program Overview

- Preliminary Assessment
- Site Investigation
- Remedial Investigation
- Engineering Evaluation/Cost Analysis
- Feasibility Study
- Remedial Design
- Remedial Action



Reno ANG Base Background

1948	Base established as the 192nd Fighter Squadron
	Base was initially equipped with P-51 aircraft and located at the Stead Army Air Base in Reno
1951	Redesignated as the 192nd Fighter Bomber Squadron
1953	ANGB leased 29 acres of land at Hubbard Field (Reno-Tahoe International Airport) from the City of Reno
1954	ANGB operations were moved from Stead Army Air Base to present location: Base now occupies approx 60 acres in the northwestern quadrant of the Airport, 5 miles southeast of Reno
1955	Redesignated as the 192nd Fighter Interceptor Squadron
1956	F-86A aircraft were assigned to the ANGB
1958	Renamed the 152nd Fighter Group
1961	Redesignated as the 152nd Reconnaissance Group; group converted to RB-57 aircraft



Reno ANG Base Background

1965	ANGB converted to RF-101 aircraft
1975	ANGB converted to RF-4C aircraft
1989	Preliminary Assessment performed by Automated Sciences Group (ASG)
1991	Site Assessment performed by PEER Consultants
1992	Site Investigation performed by Oak Ridge National Laboratory Base-wide groundwater monitoring initiated
1996	ANGB mission changed to house the 152nd Airlift Wing; because of its change in mission, the ANGB now utilizes C-130 aircraft Remedial Investigation performed by ERM



Closed Sites

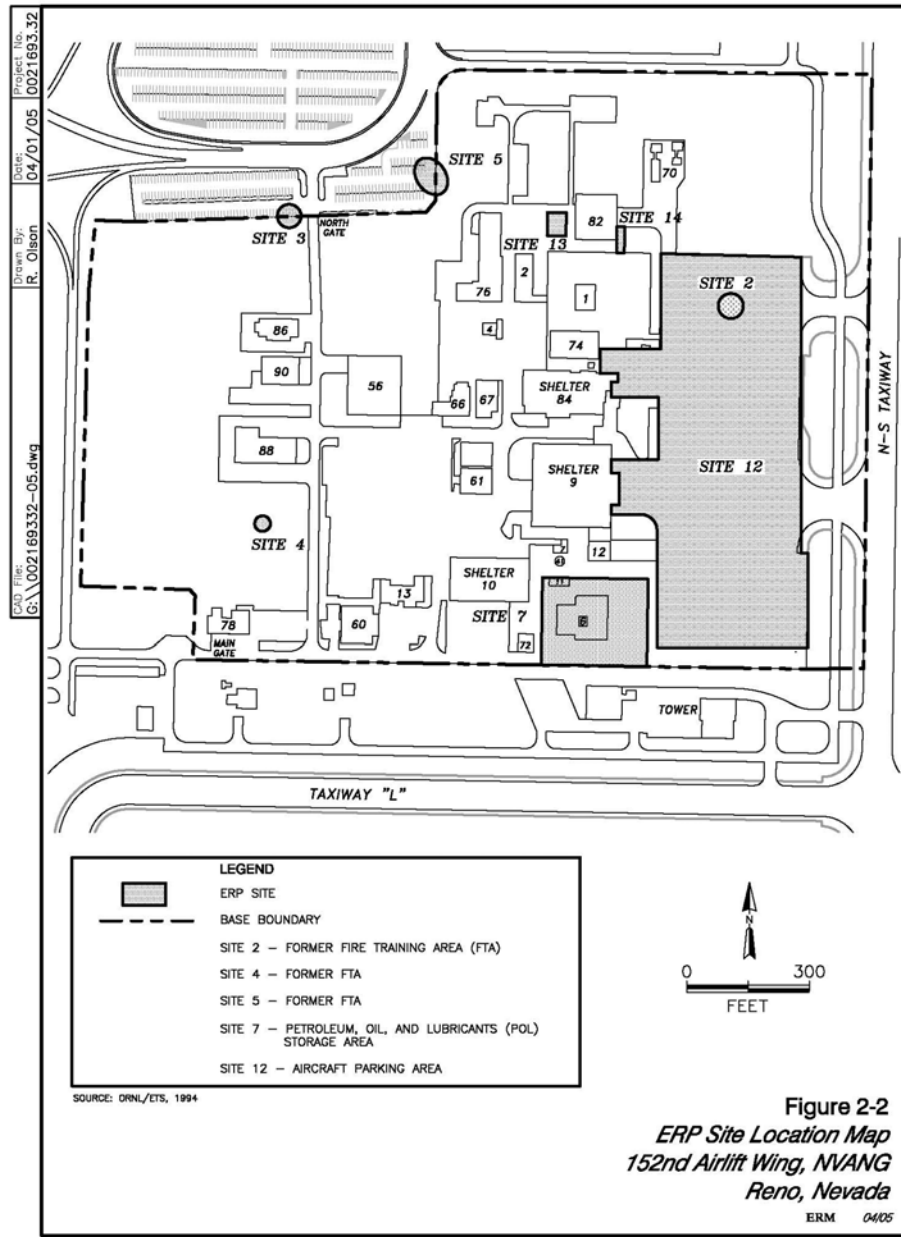
IRP Site

Investigation History

1	Former FTA - Off Base	<ul style="list-style-type: none">• Investigated by Airport Authority of Washoe County
6	Former FTA - Off Base	<ul style="list-style-type: none">• Investigated by Airport Authority of Washoe County
8	Heating Oil Tank # 76	<ul style="list-style-type: none">• Tank removed in October 1991• No TPH detected in groundwater• TPH (diesel) detected in soil - 25 mg/kg• Closure assessment report performed by ORNL in 4/92• Closure accepted by NDEP
9	Heating Oil Tank # 2	<ul style="list-style-type: none">• Tank removed in October 1991• TPH (diesel) in detected in groundwater - 47 mg/L• No TPH detected in soil• Closure assessment report performed by ORNL in 4/92• Closure accepted by NDEP
10	Heating Oil Tank # 82	<ul style="list-style-type: none">• Tank removed in October 1991• TPH (diesel) detected in groundwater - 3 mg/L• No TPH detected in soil• Closure assessment report performed by ORNL in 4/92• Closure accepted by NDEP
11	Heating Oil Tank # 84	<ul style="list-style-type: none">• Tank removed in October 1991.• TPH (diesel) detected in groundwater - 2.65 mg/L• No TPH detected in soil• Closure assessment report performed by ORNL (4/92)• Closure accepted by NDEP



Remaining ERP Sites



Sites under Closure Consideration

- **Site 2 – Former Fire Training Area**
- **Site 3 – Former Fire Training Area**
- **Site 4 – Former Fire Training Area**
- **Site 5 – Former Fire Training Area**
- **Site 12 – Former JP-4 Spill Area**
- **Site 13 – Storm Drains, Building 82**
- **Site 14 – Oil Water Separator, Bldg. 82**

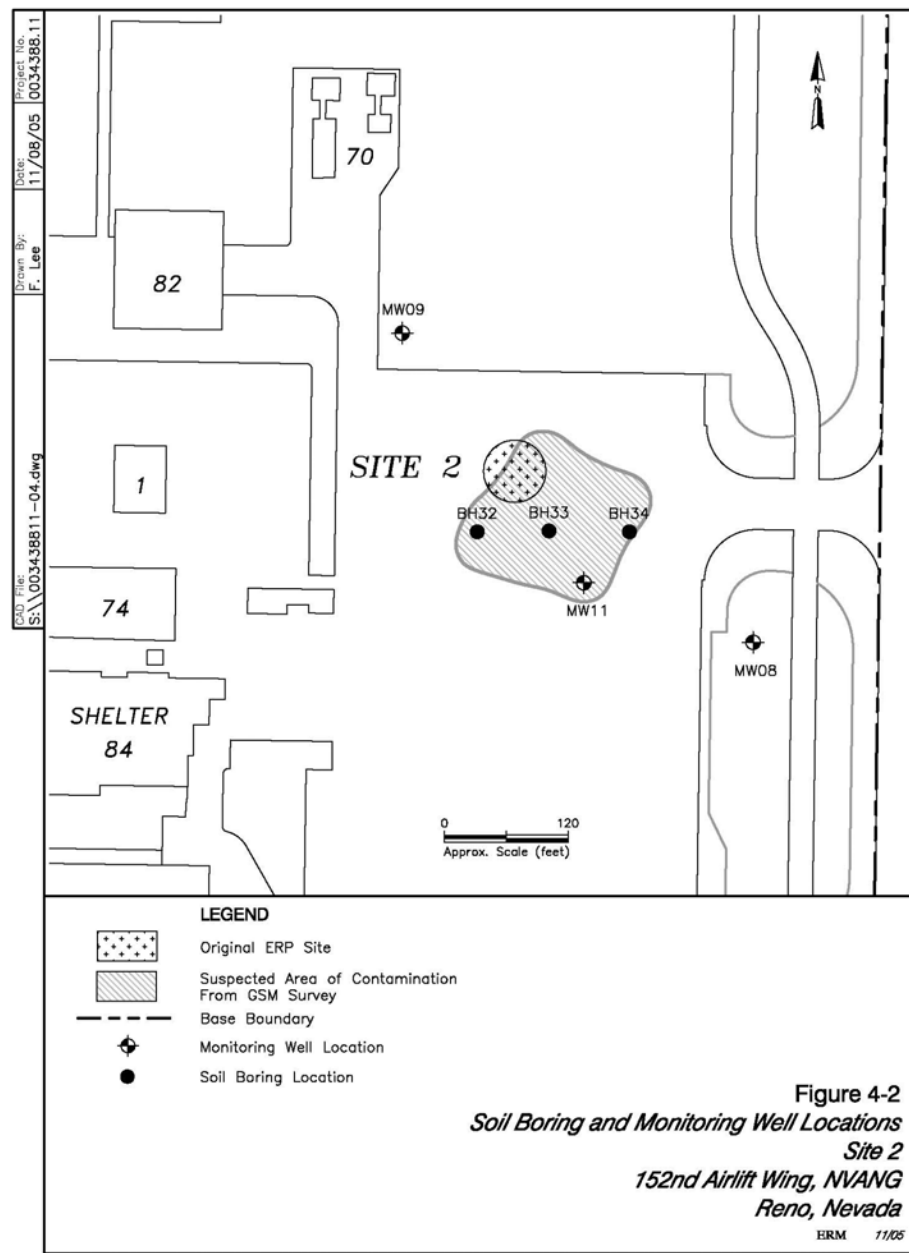


Site 2 – Former Fire Training Area

- JP-4, spent solvents, waste oils, and flammable liquids burned during training exercises
- Up to 1,800 gallons of flammable liquids may have infiltrated the ground during 4-year period
- All concentrations of organic analytes below soil cleanup levels
- Single detections of TCE and 1,2-DCE (MW-08/-08R) in '92 and '93 in dissolved phase; all other wells below groundwater cleanup levels
- Dissolved MTBE historically detected (MW-08/-08R, MW-11), but believed to originate from off-site, upgradient source
- No Further Action recommended for Site 2



Site 2



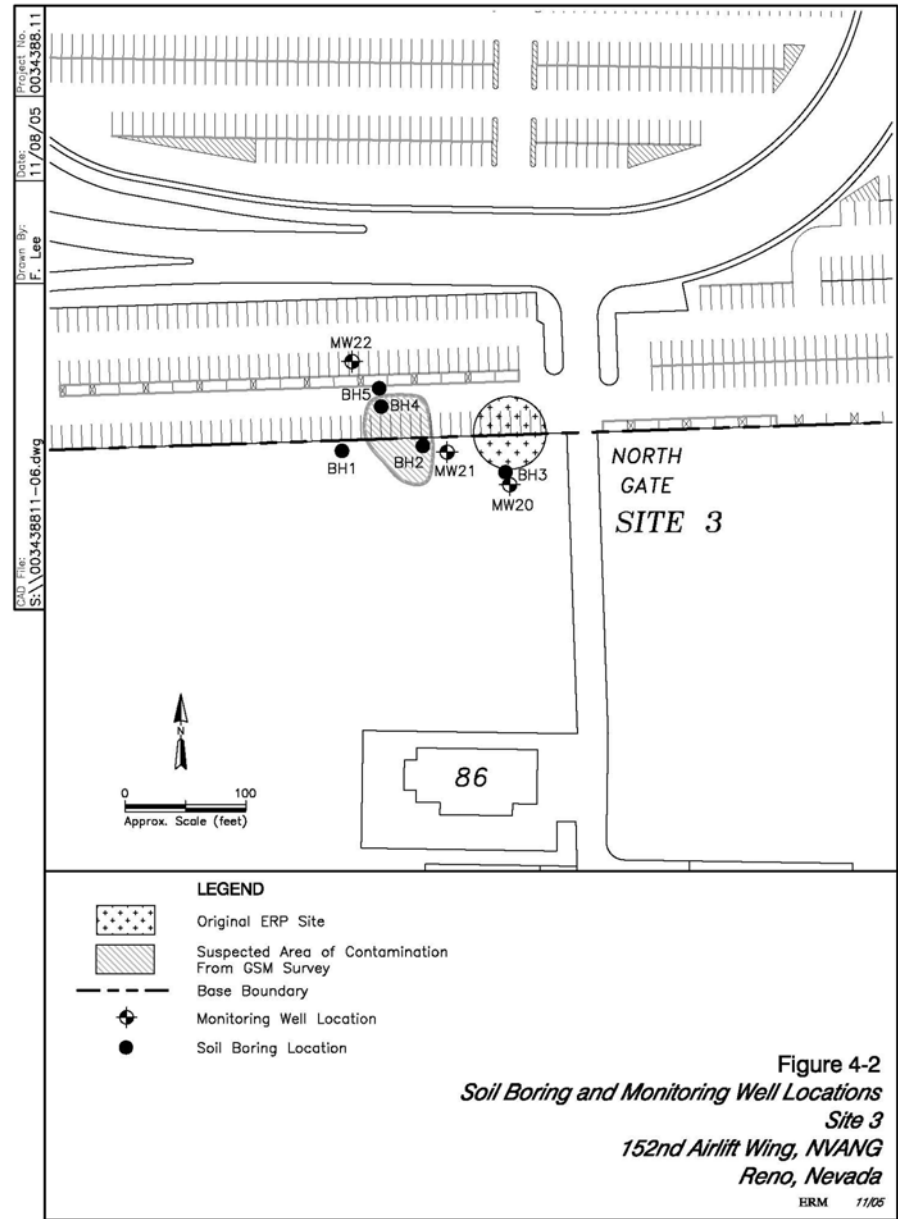
Site 3 – Former Fire Training Area

- Oils and other flammables burned during training exercises
- Up to 6,300 gallons of flammable liquids may have infiltrated the ground over 6-year period
- All concentrations of organic analytes below soil cleanup levels
- Dissolved-phase impacts limited to toluene and phthalates at trace concentrations (MW-21 and -22) during only one monitoring event; all other wells below applicable cleanup levels
- No expected change in use of Site 3 or surrounding area
- No Further Action recommended for Site 3



Site 3

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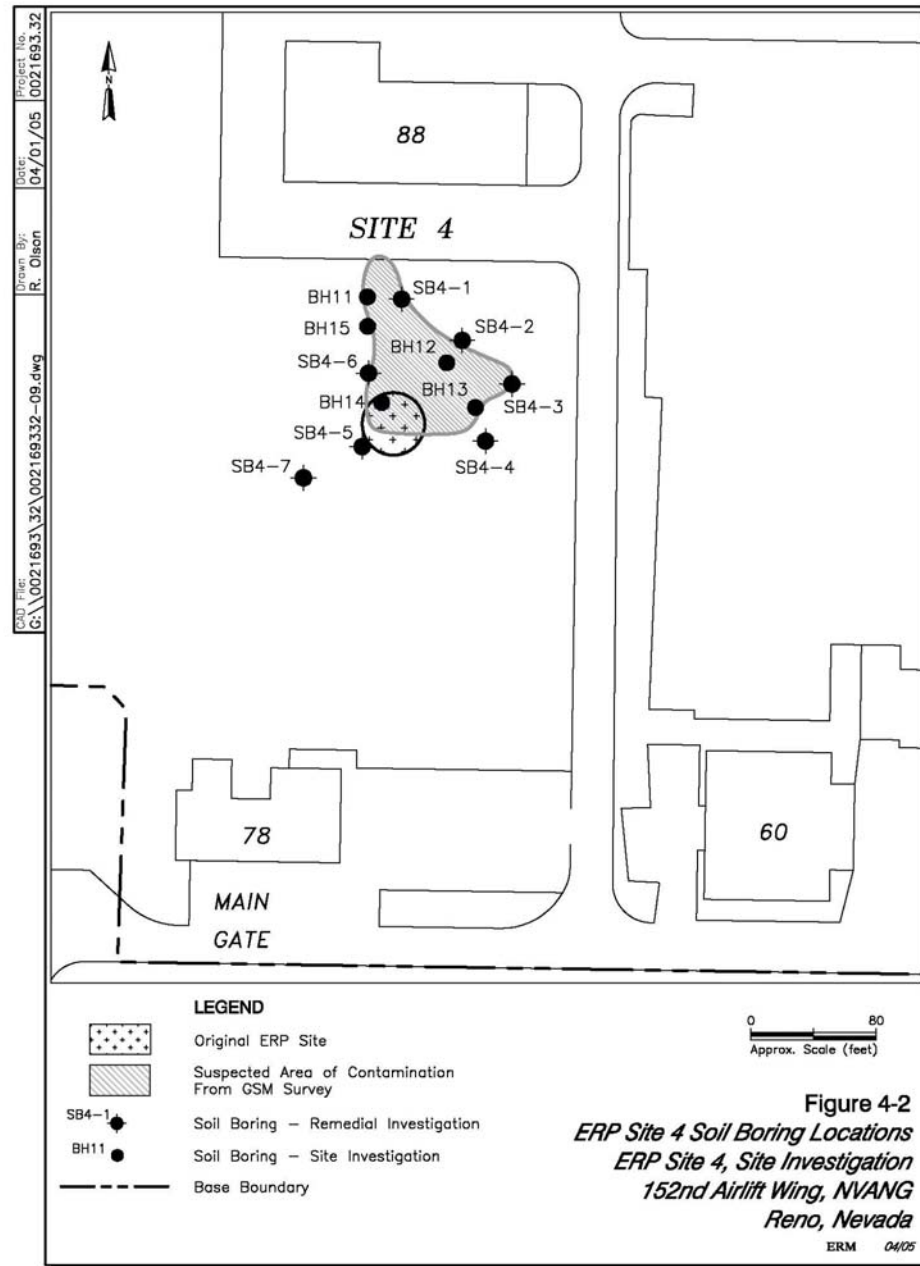


Site 4 – Former Fire Training Area

- JP-4, spent solvents, waste oils, and other flammables burned during training exercises
- Up to 270 gallons of liquids may have infiltrated the ground during 4-year period
- Results for soil indicated all analytes below applicable cleanup levels, except 1,3-DCB & 1,4-DCB (1 sample) and TPH (5 samples) detections were above groundwater protection cleanup goals, but still below human health cleanup goals
- Dissolved-phase plume is localized in vicinity of MW-05 and has decreased in size since 1992; all VOCs in groundwater have been below MCLs since 1998, except:
 - Benzene, which has exceeded cleanup goal only once since 2001, and was well below cleanup level in last sampling event (Q3 2004)
 - Dissolved MTBE historically detected (MW-05), but believed to originate from off-site, upgradient source
- Site now covered by paved roadway and landscaping, which works as a cap
- No change in use expected for Site 4
- No Further Action recommended for Site 4



Site 4



Site 4

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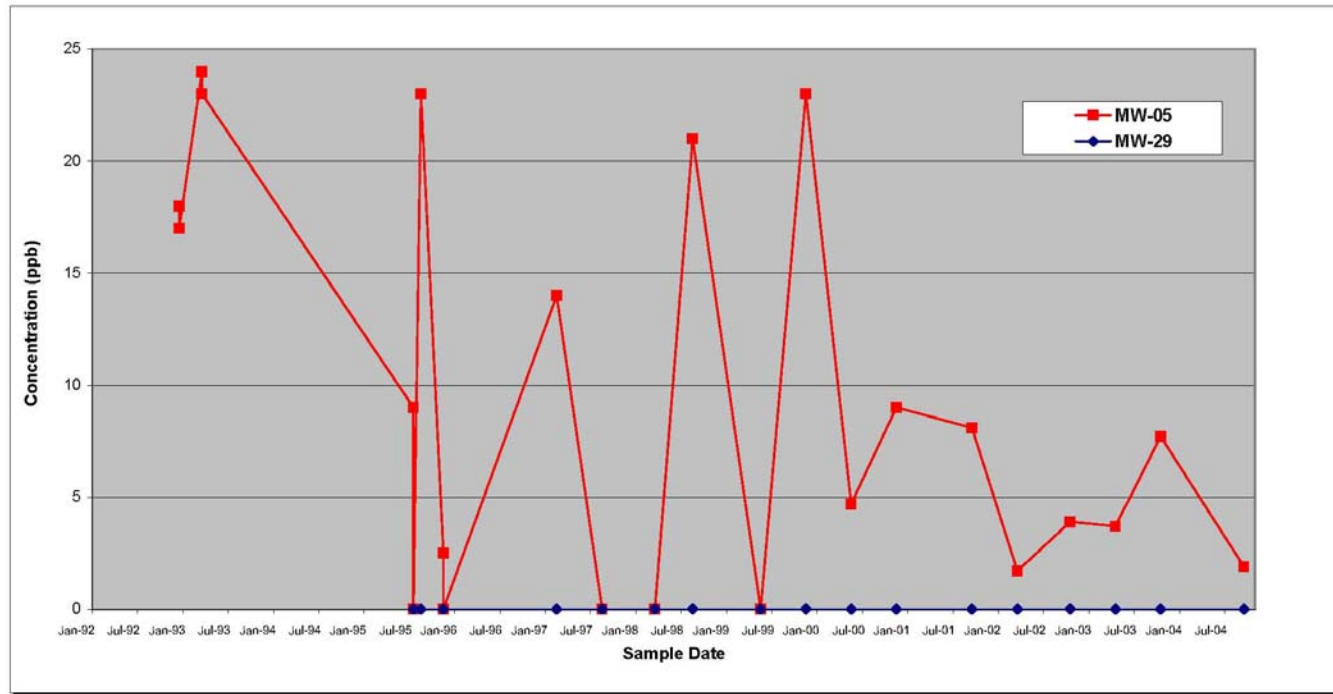


Figure 5-2
Historic Benzene Concentrations in Monitoring Wells MW-05 and MW-29
ERP Site 4
152nd Airlift Wing, NVANG
Reno, Nevada

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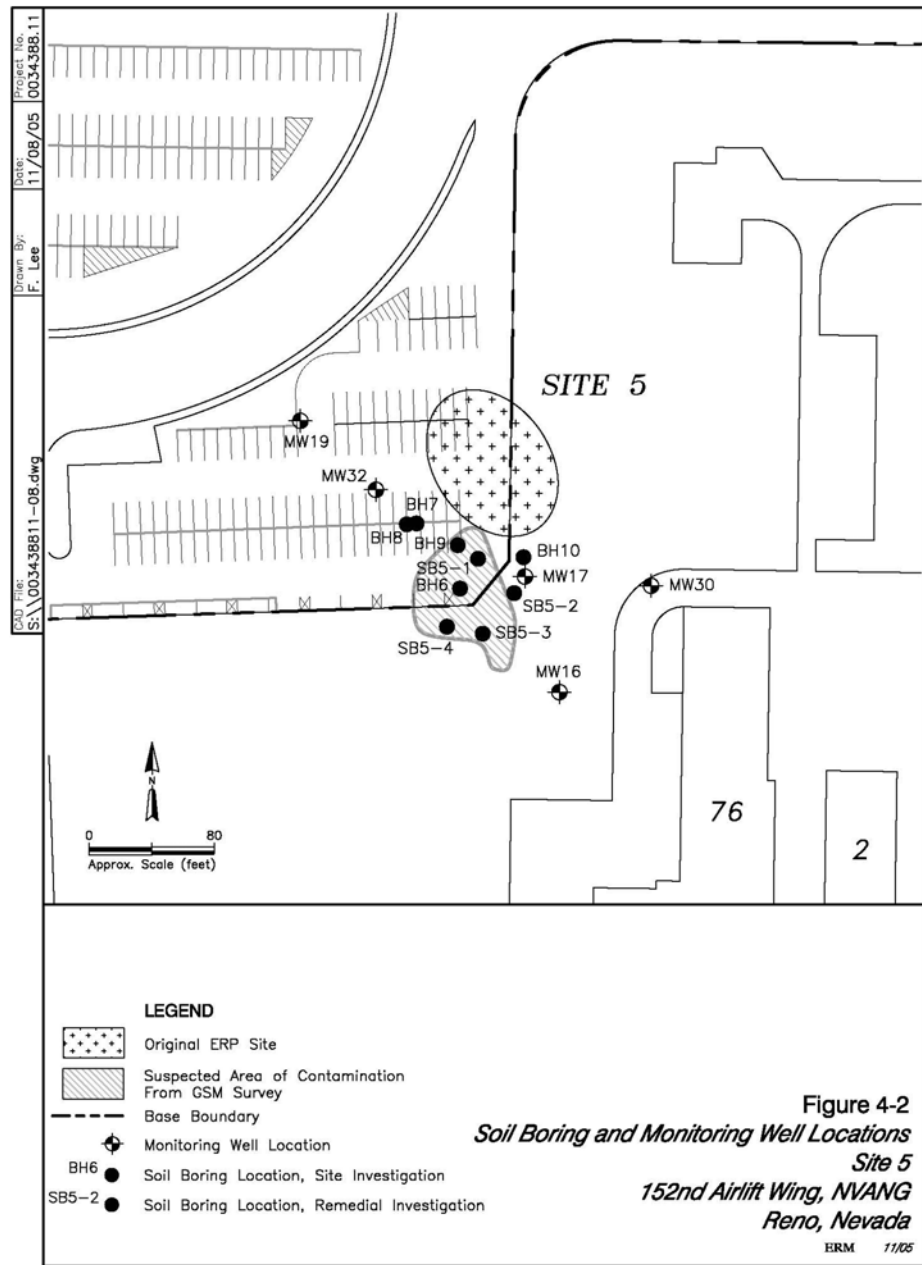


Site 5 – Former Fire Training Area

- JP-4, spent solvents, waste oils, and other flammable liquids burned during training exercises
- Up to 3,200 gallons may have infiltrated the ground over 8-year period
- TPH and methylene chloride detected in 2 samples above groundwater protection cleanup levels; impacted soil removed in '97
- Former dissolved-phase plume detected in MW-17/17R/17R2 no longer present
- No expected change in use of Site 5 or surrounding area
- No Further Action recommended for Site 5



Site 5

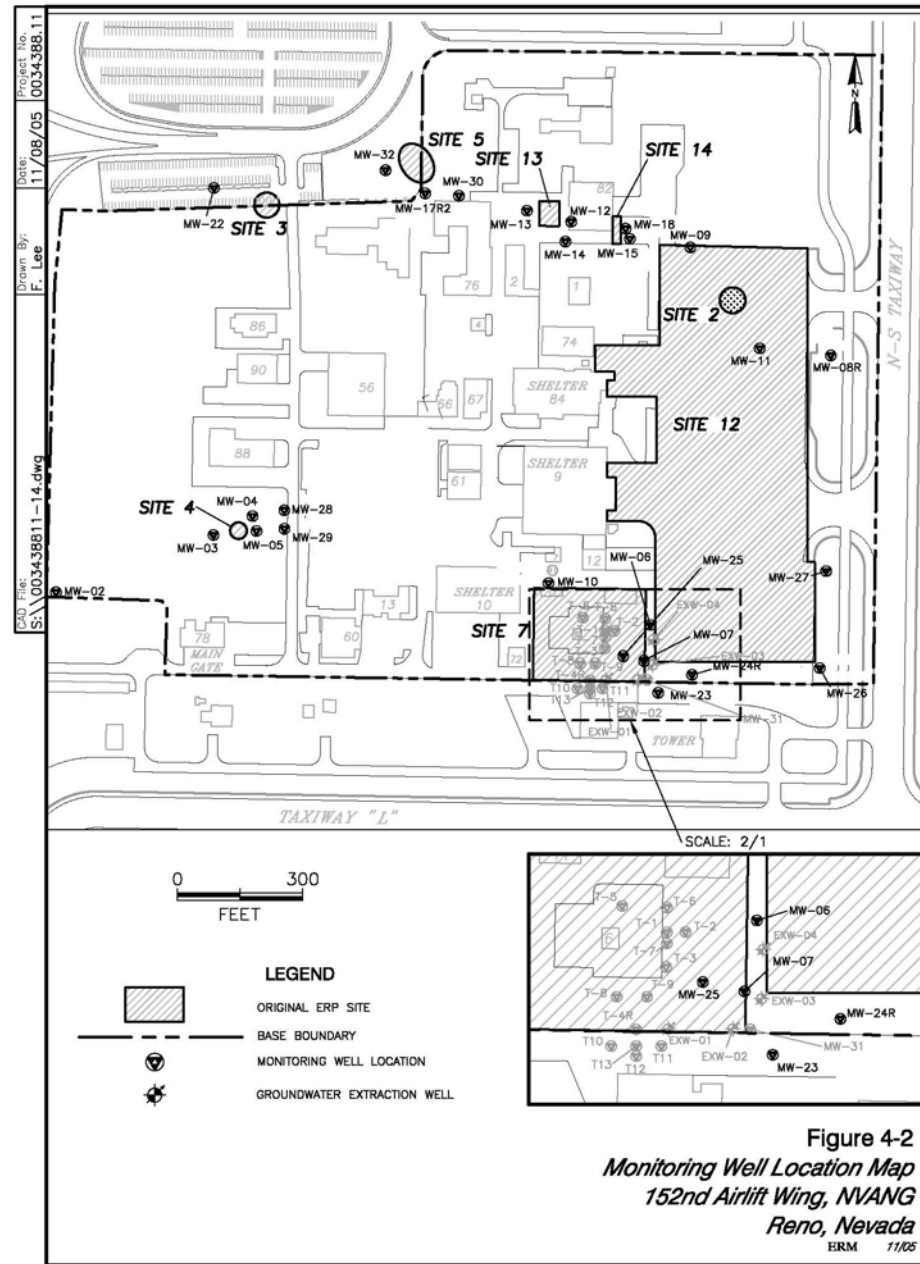


Site 12 – Former JP-4 Spill Area

- Spills covered 50x50-foot area of concrete-paved, aircraft parking apron
- An undocumented JP-4 spill occurred in the '70s, and approximately 40 gallons spilled in 1986; 4 soil samples and 1 groundwater sample collected
- TPH in soil exceeded groundwater protection cleanup levels in all 4 soil samples, but concentrations were below cleanup levels for protection of human health
- Benzene in soil only slightly exceeded groundwater protection cleanup levels in 1 sample
- No significant impacts to shallow unconfined aquifer; all detections were trace concentrations
- Site has remained covered with pavement since the releases
- No expected change in use of Site 12 or surrounding area
- No Further Action recommended for Site 12



Site 12



Site 13 – Storm Drains, Building 82

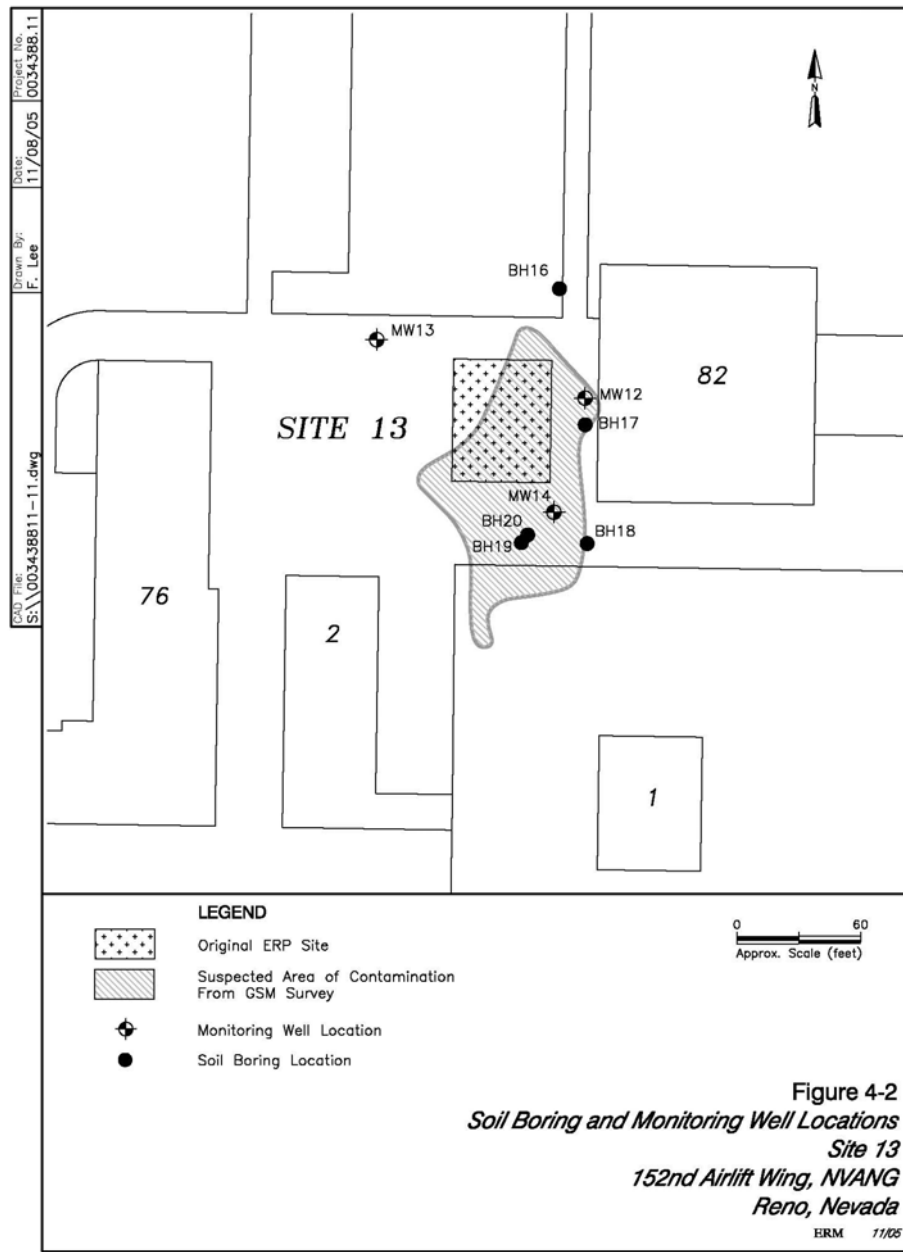
- Possible waste-oil disposal area
- Two storm drains - 1 for vehicle-wash area and 1 that received runoff from AGE storage area
- No estimate of volume of oil, grease, or hydraulic fluid historically washed into drains
- 2-Butanone, chloroform, PAHs, and TPH detected in soil, but all were below cleanup levels for protection of groundwater and human health
- Impacts to shallow unconfined aquifer are negligible – carbon disulfide, PAHs, TPH all at less than groundwater cleanup levels
- No Further Action recommended for Site 13



Site 13



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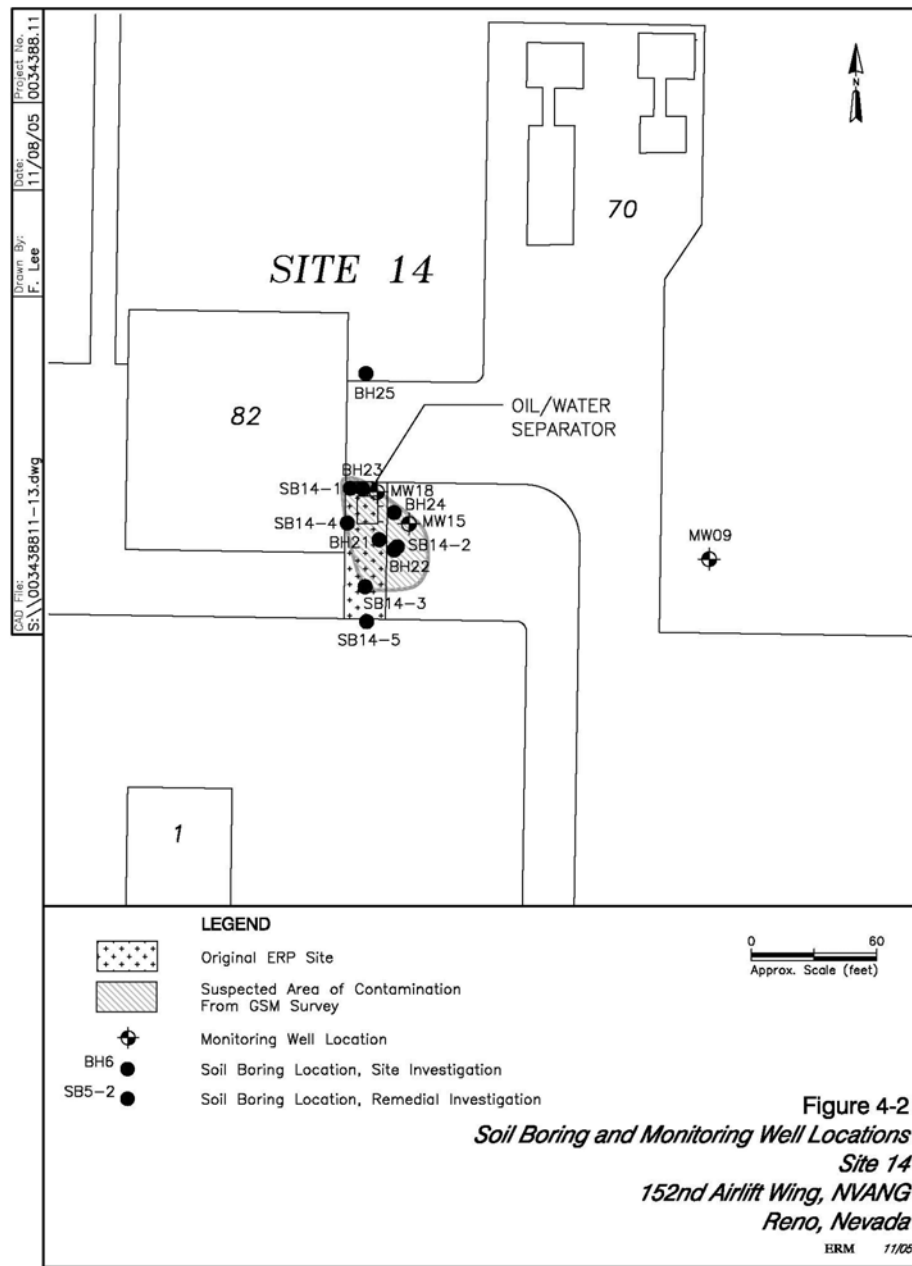


Site 14 – Oil Water Separator, Building 82

- 1,000-gallon oil/water separator overflowed onto unprotected soil in 1991, and releases of 25-50 gallons suspected up to twice a year since 1975
- Up to 1,600 gallons of JP-4 may have reached site soil
- Methylene chloride (common lab contaminant) detected above groundwater protection cleanup levels, but only in 1 boring
- TPH detected above groundwater protection cleanup levels in 5 samples, but only 1 sample slightly exceeded human health cleanup goal
- Impact to groundwater beneath site was negligible; continued leaching of residual chemicals to groundwater does not appear significant
- No expected change in use of Site 14 or surrounding area
- No Further Action recommended for Site 14



Site 14



Site 7 – Former Petroleum, Oil and Lubricant Storage Area

Background

- Site 7 area consisted of four 25,000-gallon USTs holding JP-4
- Numerous spills of JP-4 have occurred around refueling stand area of Building 42, mostly between 1973 and 1985; several spills of up to 1,000 gallons and other smaller spills of 100-300 gallons
- Prior to the 1980s, most spills were flushed into soil/graveled areas



Site 7 - Investigation History

- **Preliminary Assessment** in 1988 focused on generation, use, handling, and disposal practices for hazardous waste/materials; site recommended for further ERP investigation/Interim Removal Action
- **Site Investigation (SI)** in 1994 resulted in recommendation of an RI/FS due to presence of
 - TPH, VOCs, and SVOCs above NDEP soil remediation criteria and
 - Benzene above NDEP groundwater remediation criteria
- **SI** concluded that floating product was limited to immediate area and not related to upgradient JP-4 tanks
- **RI** in 1995 concluded that Site 7 groundwater contained benzene and bis(2-ethylhexyl)-phthalate above cleanup standards; FS recommended to evaluate alternatives for product removal



Site 7 - Investigation History, cont'd

- **EE/CA** conducted to evaluate remediation methods; selected alternative included groundwater extraction, treatment, and reinjection, with excavation and thermal treatment of soil at 2 source areas
- **Remedial Design and Installation** in 1998 involved the construction of groundwater extraction, treatment, and reinjection system; after 1 year of O&M, system was optimized by combining product skimming system with groundwater extraction system
- **Quarterly Groundwater Monitoring** included sampling, laboratory analysis, and submittal of quarterly reports to the NDEP



Site 7 - Investigation History, Cont'd.

- **Off-Site LNAPL Investigation**, conducted downgradient from Site 7 in 2002, assessed off-site migration of LNAPL from Site 7; results used to modify/optimize product recovery program
- **Remedial Process Optimization** – limited investigation to further delineate the extent of the free-phase product at Site 7; data used to prepare remedial design workplan outlining procedures for soil removal and treatment of residual dissolved-phase impacts to Site 7 groundwater



Site 7 - Site Investigation History, Cont'd

- **Remedial Implementation** – Removal of product-saturated soils:
 - Excavation and off-site disposal of approx 6,000 cy of jet-fuel-impacted soil
 - 300,000 gallons of dewatering water treated and disposed of
 - Backfilling and compaction completed, followed by complete site restoration
 - 1,425 lbs of ORC emplaced within excavation backfill
 - Impermeable layer installed along southern site perimeter to prevent migration of dissolved-phase impacts along storm water utility line
 - 5,400 lbs of ORC slurry emplaced within 180 direct-push injection locations to address upgradient & downgradient dissolved-phase impacts



Site 7 - Current Status

- Groundwater remedial actions have removed over 25,000 gallons of jet fuel from subsurface of Site 7
- Soil removal project effectively removed majority of free-product-containing soil
- Groundwater monitoring scheduled for 2006 and 2007 to assess effectiveness of the ORC on impacts to groundwater



Closing

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- **Questions?**

